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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,092	12/31/2003	Zhandong Don Zhong	034827-3901	1890

30542 7590 09/04/2008
FOLEY & LARDNER LLP
P.O. BOX 80278
SAN DIEGO, CA 92138-0278

EXAMINER	
BAUGHMAN, MOLLY E	
ART UNIT	PAPER NUMBER
1637	
MAIL DATE	DELIVERY MODE
09/04/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/750,092	ZHONG ET AL.	
	Examiner	Art Unit	
	Molly E. Baughman	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28-30,40-42,44-51 and 69-71* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *28-30,40-42,44-51 and 69-71* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's amendments to claims 28, 41, and 46, and cancellation of claims 43 and 52-68, and addition of claims 69-71 in the reply filed on 5/20/08 are acknowledged.

Response to Arguments

2. Applicant's arguments, see pg.5-6, filed 5/20/08, with respect to rejection of claims 46-49, 51, 62-65, and 67 under 35 USC § 112, second paragraph have been fully considered and are persuasive. The rejection of claims 46-49, 51, 62-65, and 67 has been withdrawn.

3. Applicant's arguments see pg.6-9, filed 5/20/08, with respect to the following rejections:

a. Claims 28-30, 40-43, 45, 52-59, 61, and 68 **(now claims 28-30, 40-43, and 45)** are rejected under 35 U.S.C. 103(a) as being unpatentable over Eberie et al (US 5,413,906, of record), in view of Furfine et al. (WO 01/38587 A2, of record).

b. Claims 44, 50, 60, and 66 **(now claims 44, 46, and 50-51)** are rejected under 35 U.S.C. 103(a) as being unpatentable over Eberie et al (US 5,413,906, of record), in view of Furfine et al. (WO 01/38587 A2, of record) as applied to claims 28-30, 40-43, 45, 52-59, 61, and 68 above, and further in view of Nelson et al., "Simultaneous Detection of Multiple Nucleic Acid Targets in a Homogeneous Format," Biochemistry, 1996, Vol.35, pp.8429-8438 (of record).

**** It is noted that claims 46 and 51 should have previously been included with the rejection of claims 44, 50, 60, and 66 under 35 U.S.C. 103(a) - Eberie et al (US 5,413,906, of record), in view of Furfine et al. (WO 01/38587 A2, of record) as applied to claims 28-30, 40-43, 45, 52-59, 61, and 68 above, and further in view of Nelson et al. (1996), since it was noted that Nelson teaches acridinium moieties having the formula TP-Sugar-Px-L-Acr. These claims are now properly included in the rejection, and response to arguments over these claims included are below.*

c. Claims 47-49, and 63-65 **(now claims 47-49)** are rejected under 35 U.S.C. 103(a) as being unpatentable over Eberie et al (US 5,413,906), in view of Furfine et al. (WO 01/38587 A2, of record) and Nelson et al. (1996), as applied to claims 44, 50, 60, and 66 above, and further in view of Petrie et al. (US 5,824,796, of record).

4. have been fully considered but they are not persuasive. Applicant's arguments over the rejections above are based on the combination of the primary references (Eberie and Furfine). In summary, Applicants argued that since Eberie and Furfine teach different technologies in which the deoxynucleotide triphosphate is used, then the kits of each would be entirely different and therefore, there would be no motivation to combine the deoxynucleotide triphosphate with acridinium ester moiety of Furfine in the kit of Eberie. This is not found persuasive because *any* reasonable motivation to combine is sufficient for rejection over the kit. The motivation to combine was based on the fact that Furfine demonstrates that it was conventional in the art at the time of the invention to label deoxynucleotide triphosphates with various labels, including

acridinium ester moieties and therefore could have easily been included in the kit of Eberie as the label on the dNTP. This is also evidenced by several other references that use acridinium esters to label dNTPs (see Nelson et al. (1996, of record), and Arnold et al., US 5,185,439). The fact that such dNTPs are used in different technologies in each of the references, as argued by the applicants, is irrelevant.

Additionally, in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

This rejection stands and therefore the rejections depending therefrom also stand.

5. Applicant's arguments, see pg.9-11, filed 5/20/08, with respect to the following rejections:

a. Claims 28-30, 40-46, 52-62, and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eberie et al (US 5,413,906, of record), in view of Celebuski et al. (EP 0407816 A2).

b. Claims 47-49, and 63-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eberie et al (US 5,413,906) in view of Celebuski et al. (EP 0407816 A2) as applied to claims 28-30, 40-46, 52-62, and 68 above, and further in view of Petrie et al. (US 5,824,796, of record).

c. Claims 44, 50-51, 60, and 66-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eberie et al (US 5,413,906, of record), in view of Celebuski et al. (EP 0407816 A2) as applied to claims 28-30, 40-46, 52-62, and 68 above, and further in view of Nelson et al., "Simultaneous Detection of Multiple Nucleic Acid Targets in a Homogeneous Format," Biochemistry, 1996, Vol.35, pp.8429-8438 (of record). have been fully considered and are persuasive. The rejections have been withdrawn.

New Grounds of Rejection Necessitated by Amendment

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claim 69 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eberie et al (US 5,413,906, of record), in view of Furfine et al. (WO 01/38587 A2, of record), and further in view of Farrell et al. (US 2002/001810 A1).

The teachings of the primary references can be found in the previous Office Action, specifically teaching the kit of claim 28, from which claim 69 depends. These references do not teach the kit wherein the DNA primer is chemically linked to the 5' end of the RNA template.

Farrell et al. teach DNA primers chemically linked to RNA templates. Farrell states that such chimeras provide an ultra-sensitive assay for reverse transcriptase activity (see pg.3, [0052-0053], [0058-0060]).

One of ordinary skill in the art would have been motivated to modify the kit of Eberie et al., as modified by Furfine et al., to incorporate a DNA primer that is chemically linked to the 5' end of the RNA template because it was conventional in the art at the time of the invention to use DNA primers linked to RNA templates for assaying reverse transcriptase activity, as demonstrated by Farrell (see pg.3). Furthermore, Farrell also states that using such chimeras in reverse transcriptase activity assays makes the reaction completely dependent on the enzyme (see [0053]). Since Eberie demonstrates the benefits of providing kits comprising reagents necessary for assaying reverse transcriptase activity and Farrell demonstrates the benefits of using DNA

primers linked to RNA templates for assaying reverse transcriptase activity, it would have been obvious to one skilled in the art to substitute the template and primer for the chimera to achieve the predictable result of incorporating a template/primer into the kit for assaying reverse transcriptase activity.

9. Claim 70 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eberie et al (US 5,413,906, of record), in view of Furfine et al. (WO 01/38587 A2, of record), and further in view of Peng et al. (US 2004/0067492 A1).

The teachings of the primary references can be found in the previous Office Action, specifically teaching the kit of claim 28, from which claim 70 depends. These references do not teach the kit wherein the DNA primer comprises a capture moiety which can be captured by the solid phase.

Peng discusses methods and kits of conducting reverse transcription comprising primers having a capture moiety which can be captured on a solid phase (see abstract, paragraphs [0018], [0022], and [0031]).

One of ordinary skill in the art would have been motivated to modify the kit of Eberie et al., as modified by Furfine et al., to incorporate a primer comprising a capture moiety because Eberie demonstrates the benefits of incorporating capture moieties into the product for solid phase capture (i.e. Eberie uses dNTPs comprising capture moieties in the kit) and Peng demonstrates that it was conventional in the art at the time of the invention to include primers labeled with capture moieties in kits for reverse transcriptase assays where the primers are captured onto solid phases. Furthermore, Peng states that using such captured modified primers provides great sensitivity; better

accuracy and less time consumption, as compared to conventional hybridization-based approaches (see [0013]). Therefore, the skilled artisan would have had a reasonable expectation of success in including a primer comprising a capture moiety in the kit of Eberie et al., as modified by Furfine et al., in order to provide a kit for a more sensitive, accurate and efficient reverse transcription assay via solid phase capture. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to build the claimed kit and include the claimed primer comprising a capture moiety therein.

10. Claim 71 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eberie et al (US 5,413,906, of record), in view of Furfine et al. (WO 01/38587 A2, of record), and further in view of Kallander et al. (US 6,849,406).

The teachings of the primary references can be found in the previous Office Action, specifically teaching the kit of claim 28, from which claim 70 depends. These references do not teach the kit wherein the template comprises a capture moiety which can be captured by the solid phase.

Kallander discusses methods and kits of analyzing reverse transcription activity comprising templates having a capture moiety which can be captured on a solid phase (see abstract).

One of ordinary skill in the art would have been motivated to modify the kit of Eberie et al., as modified by Furfine et al., to incorporate a template comprising a capture moiety because Eberie demonstrates the benefits of incorporating capture

moieties into the product for solid phase capture (i.e. Eberie uses dNTPs comprising capture moieties in the kit) and Kallander demonstrates that it was conventional in the art at the time of the invention make kits comprising templates labeled with capture moieties for analyzing reverse transcriptase activity where the template is captured onto solid phases. Furthermore, Kallander states that kits including such components provide for a reverse transcriptase assay which is easy to use for screening purposes and which is very sensitive for reverse transcriptase activity (see col.4, lines 38-40). Therefore, the skilled artisan would have had a reasonable expectation of success in including a template comprising a capture moiety in the kit of Eberie et al., as modified by Furfine et al., in order to provide a kit for sensitive reverse transcriptase activity detection. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to build the claimed kit and include the claimed template comprising a capture moiety therein.

Summary

11. No claims are free of the prior art.

12. Any remaining rejections and/or objections not addressed above are withdrawn in view of the amendments and/or arguments.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Molly E. Baughman whose telephone number is (571)272-4434. The examiner can normally be reached on Monday-Friday 8-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kenneth R Horlick/
Primary Examiner, Art Unit 1637

/Molly E Baughman/
Examiner, Art Unit 1637